

REMARKS

Claims 11, 38, 39 and 41 have been amended. Claims 11-14, 17-20, 22-24, 38, 39 and 41 are pending and under consideration. No new matter is presented in this Amendment. Claims 11, 38, 39 and 41 are the independent claims.

REJECTIONS UNDER 35 U.S.C. §103:

Claims 11-14, 17-20, 24, and 39 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kweon et al. (U.S. Patent No. 6,183,911) in view of Gao et al. (U.S. Pre-Grant Publication No. 2002/0127175) in view of JP 11-097027.

Regarding the rejection of independent claim 11, it is noted that claim 11 recites a method of preparing a positive active material for a rechargeable lithium battery comprising: coating at least one lithiated compound with an organic solution of coating material source, the organic solution excluding water and prepared by adding a coating material source to an organic solvent forming a mixture, to produce a coated lithiated compound; and drying the coated lithiated compound at a temperature between 60°C to 100°C forming a surface treatment layer on the coated lithiated compound without heat-treating the dried coated lithiated compound, wherein the surface treatment layer includes a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof, and wherein the at least one lithiated compound is prepared by mixing a lithium source, a metal source, and a solvent and the mixture is heat-treated twice.

The Office Action relies on Kweon for some of the teachings of independent claim 11. In particular, the Office Action states that the active material is made by a process of dissolving vanadium pentoxide in an organic solution, coating the active material, and drying the coated compound at 100-1000°C for 1-20 hours and cites column 2, lines 35-65 of Kweon for such teachings. In other words, the Office Action appears to rely on the active material coated with vanadium pentoxide for a teaching of a surface treatment layer formed on the lithiated compound. Applicants respectfully traverse such assertions for, at least, the following reasons.

As noted in column 3, lines 15-23, Kweon discloses that the vanadium pentoxide (V_2O_5) solution was prepared by dissolving 1 g of vanadium pentoxide powder in 100 g of distilled water. The 50 ml of vanadium pentoxide solution was then mixed with 100 g of $LiMn_2O_4$ powder

such that an overall surface of the power became sufficiently wet by the solution, and dried. Thereafter, the dried mixture was heat-treated at about 600°C for about 10 hours under a dry air atmosphere to thereby prepare a vanadium pentoxide-coated active material.

Accordingly, Applicants respectfully note that Kweon teaches that to form the surface treatment layer, the vanadium pentoxide solution must first be dried and thereafter, the dried mixture formed on the lithiated compound is heat-treated. In other words, Kweon teaches a process for forming a surface treatment layer on a lithiated compound along the lines of the conventional art illustrated in FIG. 4 of the present application. As noted in the left hand side of FIG. 4, the mixture is first dried and after the mixture has been dried, the dried mixture is heat treated. That is, Kweon teaches a method of forming the surface treatment layer that includes drying the mixture and heat-treating the dried mixture, and not a one-shot process. Accordingly, Applicants respectfully assert that Kweon fails to teach or suggest this novel feature of independent claim 11.

Gao, on the other hand, is relied upon for a teaching of preparing a lithiated compound by mixing a lithium source, a metal source, and a solvent and heat-treating the mixture twice. Gao however, makes no reference or suggestion of drying the coated lithiated compound, and forming a surface treatment layer on the coated lithiated compound without heat-treating the dried coated lithiated compound. Accordingly, Gao fails to cure the deficiencies of Kweon.

Finally, the Office Action states that Kweon does not teach that the coating material is a hydroxide, oxyhydroxide, oxycarbonate, or hydroxycarbonate and relies on JP '027 (abstract and paragraph [0011]) for such teachings. However, Applicants respectfully note that JP '027 simply discloses providing an enveloping layer on a positive electrode surface, and that the enveloping layer includes an alkali metal salt, an oxide, and a hydroxide. That is, JP '027 at most teaches a hydroxide enveloping layer formed on a surface of a positive electrode. JP '027 however, makes no reference or suggestion of forming this enveloping layer on an active material of a lithiated compound, as recited in independent claim 11. Therefore, even assuming that JP '027 were combinable with Gao and Kweon, Applicants respectfully assert that all the features of independent claim 11 have not been taught.

Furthermore, Applicants respectfully note that the machine English translation of JP '027 provided by the Examiner is unclear, which makes it difficult to fully determine what JP '027 discloses. Therefore, if the Examiner continues to rely on JP '027, it is respectfully requested that the Examiner obtain a human English translation of JP '027 pursuant to MPEP 901.05(d)

and MPEP 901.06(a)(IV)(D), and provide the human English translation of JP '027 with the next Office Action.

Regarding the rejection of independent claim 39, it is noted that this claim recites some substantially similar features as claim 11. Thus, the rejection of this claim is also traversed for similar reasons as set forth above.

Accordingly, Applicants respectfully assert that the rejection of claims 11 and 39 under 35 U.S.C. § 103(a) should be withdrawn because neither Kweon, Gao nor JP '027, whether taken singly or combined, teach or suggest the novel features of independent claims 11 and 39.

Furthermore, Applicants respectfully assert that the rejection of dependent claims 14, 17-20 and 24 under 35 U.S.C. §103(a) should be withdrawn, at least, because of their dependency from claim 11, and the reasons set forth above, and because the dependent claims include additional features which are not taught or suggested by the prior art. Therefore, it is respectfully submitted that claims 14, 17-2 and 24 also distinguish over the prior art.

Claims 22, 23, and 38 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kweon et al. (U.S. Patent No. 6,183,911) in view of Gao et al. (U.S. Pre-Grant Publication No. 2002/0127175) in view of JP 11-097027, further in view of Maegawa et al. (U.S. Patent No. 6,383,235).

Regarding the rejection of independent claim 38, it is noted that claim 38 recites a method of preparing a positive active material including a core and a surface-treatment layer, for a rechargeable lithium battery, the method comprising: coating the core including at least one lithiated compound, with an organic solution of coating material source, the organic solution excluding water and prepared by adding a coating material source to an organic solvent to form a mixture; and drying the coated core at a temperature between 60°C to 100°C, without heat-treating the core, forming the surface treatment layer on the core, wherein the surface treatment layer includes a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof, wherein the coating and drying of the lithiated compound is performed by injecting the lithiated compound and the organic solution into a mixer and continuously increasing the temperature within the mixer, and wherein the at least one lithiated compound is prepared by mixing a lithium source, a metal source, and a solvent and the mixture is heat-treated twice. Accordingly, independent claim 38 recites some substantially similar features as claim 11. Thus, the rejection of this claim in view of Kweon, Gao and JP '027 is also

traversed for similar reasons as set forth above with respect to independent claim 11.

Maegawa, on the other hand, is relied upon for a teaching of forming a cathode material by spray-drying. Maegawa however, makes no reference or suggestion of drying the coated core, without heat-treating the core, thus forming the surface treatment layer on the core. Therefore, Maegawa fails to cure the deficiencies of Kweon, Gao and JP '027.

Accordingly, Applicants respectfully assert that the rejection of claim 38 under 35 U.S.C. § 103(a) should be withdrawn because neither Kweon, Gao, JP '027, nor Maegawa, whether taken singly or combined, teach or suggest the novel features of independent claim 38.

Regarding the rejection of claims 22 and 23, it is noted that these claims depend from independent claim 11, and as noted above, neither Kweon, Gao, JP '027, nor Maegawa, whether taken singly or combined, teach or suggest the novel features of independent claim 11.

Accordingly, Applicants respectfully assert that the rejection of dependent claims 22 and 23 under 35 U.S.C. §103(a) should be withdrawn at least because of their dependency from claim 11, and because the dependent claims include additional features which are not taught or suggested by the prior art. Therefore, it is respectfully submitted that claims 22 and 23 also distinguish over the prior art.

Claim 41 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kweon et al. (U.S. Patent No. 6,183,911) in view of Gao et al. (U.S. Pre-Grant Publication No. 2002/0127175) in view of JP 11-097027, and further in view of Shindo et al. (U.S. Patent No. 6,045,947).

Regarding the rejection of independent claim 41, it is noted that claim 41 recites a method of preparing a positive active material for a rechargeable lithium battery comprising: coating at least one lithiated compound having an average diameter of 10 μ m with an organic solution of coating material source, the organic solution excluding water and prepared by adding a coating material source to an organic solvent to form a mixture and to produce a coated lithiated compound; and drying the coated lithiated compound at a temperature between 60°C to 100°C forming a surface treatment layer on the coated lithiated compound without heat-treating the dried coated lithiated compound, wherein the surface treatment layer includes a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof, and wherein the at least one lithiated compound is prepared by mixing a lithium source, a metal source, and a solvent and the mixture is heat-treated twice.

Accordingly, independent claim 41 recites some substantially similar features as claim 11. Thus, the rejection of this claim in view of Kweon, Gao and JP '027 is also traversed for similar reasons as set forth above with respect to independent claim 11.

Shindo, on the other hand, is relied upon for a teaching of a particle diameter the lithiated compound.

Shindo however, makes no reference or suggestion of drying the coated lithiated compound without heat-treating the dried coated lithiated compound, thus forming the surface treatment layer on the coated lithiated compound. Therefore, Shindo fails to cure the deficiencies of Kweon, Gao and JP '027.

Accordingly, Applicants respectfully assert that the rejection of claim 41 under 35 U.S.C. § 103(a) should be withdrawn because neither Kweon, Gao, JP '027, nor Shindo, whether taken singly or combined, teach or suggest the novel features of independent claim 41.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

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